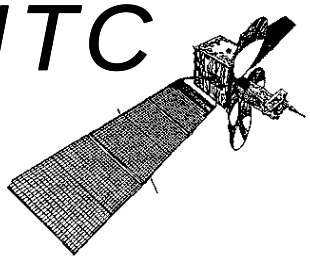
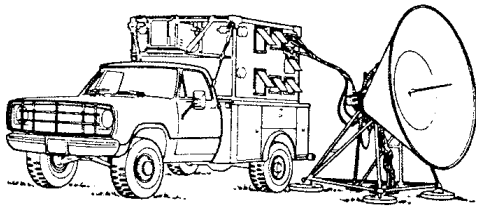
NEWSLETTER

No. 01-1 JAN 01

Commo at the NTC



We Gotta' Talk!



CENTER FOR ARMY LESSONS LEARNED (CALL)
U. S. ARMY TRAINING AND DOCTRINE COMMAND (TRADOC)
FORT LEAVENWORTH, KS 66027-1350

Commo at the NTC
We Gotta' Talk!

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Unless otherwise stated, whenever the masculine or feminine gender is used, both are intended.

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INTRODUCTION

BATTLEFIELD COMMO IS EVERYONE'S JOB

Brigade Combat Team (BCT) success depends on effective communication throughout its battlespace. Signal personnel are the experts, but everyone in the chain has a role to play. Battlefield play at the NTC challenges the communication skills of soldiers and leaders alike. NTC stress ultimately strengthens signal team skills, but training weaknesses are equally exploited. Whether this stress forges well-trained crews ultimately decides the battle.

Many training steps must be taken before arrival at the NTC. Reception, Staging, Onward movement & Integration (RSOI) mandates a relentless march toward combat operations and a myriad of communications tasks. Brigade and Battalion Signal Officers (BSOs) and their sections as well as the Mobile Subscriber Equipment (MSE) Company are immediately tested. Commanders, operations officers, signal officers, communications chiefs, and MSE companies/teams can benefit from the signal lessons learned and the tactics, techniques and procedures (TTPs) presented here. These TTPs have worldwide application.

As a previous NTC Commander, Operations Group (COG), once said, "If you don't have communications, you're just out camping in the desert!"

SELF-ADMINISTERED PRE-TEST

See if you really need to read this material. We'll give you the answers on page VII so that you can assess your performance.

1. To confirm that your unit is prepared for combat operations, you must conduct a _____.

2. The Brigade Signal Annex must contain what information:
   _____
   _____
   _____

3. What report tracks the status of all communications assets?
   _____

4. The acronym PACE is used to plan communications. PACE stands for:
   _____
   _____
   _____
   _____

5. What process produces the greatest integration, coordination, and synchronization for an operation and minimizes the risk of overlooking a critical aspect of the operation? _____

6. During which step in the Military Decision-Making Process does the Brigade S6 develop his initial communications plan? _____

7. Generally, different courses of action for the MSE Signal Company will have different _____ and/or different _____ for signal teams.

8. The _____ is the basis for MSE network flexibility and is the initial step in planning for signal site security and force protection.

9. What type of offensive operation requires the signal plan to have more flexibility? _____

10. What are the two types of risks that must be considered in the Risk Management Process?
    _____
    _____

11. At a minimum, how often should signal teams conduct Pre-Combat Checks and Inspections?
    _____

ANSWERS

1. Communications Exercise (COMMEX).

2. Concept of Communications Plan.
   Retrans Plan and Signal Architecture.
   Remote Access Unit, RAU, Coverage Plan.

3. The ORANGE Report.

4. P - Primary
   A - Alternate
   C - Contingency
   E - Emergency

5. The Military Decision-Making Process.

6. Step II - Mission Analysis.

7. Network Diagrams.
   Schemes of Maneuver.

8. Signal Site Reconnaissance.

9. The Movement to Contact.

10. Operational.
    Safety.

11. Daily.

SECTION I
PREPARATION AND PLANNING OF TACTICAL COMMUNICATIONS

Chapter 1: PREPARATION OF TACTICAL COMMUNICATIONS

Part I
TACTICAL COMMUNICATIONS TRAINUP FOR THE NTC

An adequate communications training strategy must be applied before the unit deploys to the NTC. The unit otherwise finds itself attempting to fix systems and train soldiers throughout the campaign. Training shortfalls have proven to be the kiss of death. Units must employ a signal training strategy that complements the maneuver brigade and battalion training strategies. Communications training opportunities typically occur during simulation and maneuver exercises.

1. **Commanders, executive officers, operations officers and battle captains must understand the capabilities of RETRANS operations and existing communications systems.** NTC observations indicate that leaders do not understand how RETRANS systems and existing communications systems function, thereby inadequately extending the BCT's ability to communicate both voice and digitally across the NTC battlefield. Commanders, S3s, and staff members must understand simple and complex RETRANS operations. Their ability to communicate across the NTC's multiple corridors is essential to C^2. Understanding the communications capabilities is crucially important or the unit will simply not communicate. Commanders and even the most skilled and proficient S3s will have little effect if they cannot communicate.

2. **Leaders must integrate the brigade/battalion signal officer and the MSE commander or LO in the Military Decision-Making Process.** Signal officers are often inadequately involved with the MDMP, which results in an unsynchronized communications plan. As a result, the BCT's key C^2 nodes and communications recourses, such as ground RETRANS, EPLRS, S/C TACSAT, Mobile Subscriber Equipment (MSE), air C^2 platforms and air RETRANS systems, do not support the brigade's maneuver plan or meet the commander's intent.

3. **Train with FM RETRANS systems during field training exercises as well as simulation training exercises.** Units frequently do not train with the use of RETRANS systems until they arrive at the NTC. Units quickly realize their lack of training and inadequate familiarization with RETRANS system operations. This poses a significant challenge for Command, Control and Communications (C^3). As the BCT fights through multiple corridors, the signal plan gets more complex. Units are not visualizing the different communications requirements of offensive and defensive operations.

4. **Train with the communications equipment before deploying to the NTC.** Units are deploying to the NTC with inadequate training on Single-Channel TACSAT (S/C TACSAT) and EPLRS operations. Units rarely achieve operational readiness (OR) with this vital communications and situational awareness equipment. Observer/Controllers (O/Cs) track training on these systems during RSOI week. Operators cannot establish competency during one hectic week. The result is soldiers who have no confidence in their communications

equipment. Units must improve home-station training in these systems so that their commanders have the full advantage of communications redundancy.

S/C TACSAT: Brigade COLTs, TF scouts, and heavy tank and mechanized organizations bring their S/C TACSAT to the NTC with very little knowledge of how to use the equipment. Units using S/C TACSAT must be aware that the technical data from their home station may not work at Fort Irwin, CA. They must learn how to use the KY-99 secure device.

EPLRS: Situational awareness terminals (SA Terminals) are not being used well at the NTC. Personnel lack the skills to exploit the terminal. Units do not adequately apply operational graphics, friendly and enemy minefields, or use its message capabilities. Units do not maintain friendly battle tracking of combat forces.

Part II
BUILDING COMMUNICATIONS DURING RSOI WEEK

Units are expected to complete many tasks during the RSOI week as the brigade builds combat power in preparation for tactical operations. An organized, preplanned communications radio and installation kit draw plan, coupled with a preplanned communication exercise (COMMEX), is essential to ensure unit success during the build-up of communications power. Writing the signal RSOI plan into the deployment order will create an RSOI signal success story.

The RSOI matrix at Figure 1 on page I-3 outlines an example of "A WAY" to maintain an accurate timeline of critical events *before* your deployment to the NTC. Specific details are provided, beginning 180 days before your deployment. You must track and account for 100 percent of the communications resources of your unit's task organization when planning for this deployment. Omission of one organization's communications resources can be costly to your unit.

CRITICAL EVENTS TIMELINE PRIOR TO YOUR UNIT'S ARRIVAL

DATE	C-	EVENT	BDE	TF AR	CAV	TF IN
	C-180	NTC SENDS SOI INFORMATION PACKET TO BSO.				
	C-120	DOIM/FT IRWIN PROVIDES INFORMATION PACKET TO BSO.				
	C-104	REQUEST SINGLE-CHANNEL TACSAT.				
		DRAFT SOI TO BATTALIONS FOR INITIAL SCRUB.				
		DISTRIBUTE DRAFT MSE PHONE BOOK TO UNITS.				
	C-99	G-6 RECEIVES FREQUENCIES FROM NTC.				
	C-91	IDENTIFY SPECIAL COMMUNICATIONS REQUIREMENTS.				
		UNITS PROVIDE MSE & SOI INPUT TO BDE SIGO.				
	C-90	BDE S6 SUBMITS REQUIREMENTS LIST TO NTC.				
		SCHEDULE VTC WITH NTC SIGNAL O/Cs.				
		SUBMIT TASKINGS THRU S-3 FOR SPECIAL COMMO REQ.				
		SUBMIT REQUEST FOR IFF CODES.				
	C-80	PRC-127 NUMBERS DUE TO BDE.				
	C-60	NTC PROVIDES A DRAFT SOI FOR REVIEW.				
		SEND CMD SOI TIME PERIOD 1 FOR PRODUCTION OF DRAFT SOI.				
		REQUEST MSE FREQUENCIES.				
		REQUEST NETS NOT COVERED IN SOI.				
	C-51	SUBMIT FINAL SOI & MSE PHONE BOOK REQ TO BDE S6.				
		SUBMIT TELEPHONE LSRs TO FT IRWIN DOIM.				
		IDENTIFY CRITICAL NMC COMMO EQT FOR POSSIBLE FLOAT.				
	C-30	COORDINATE W/ 52ID G6 ON RETRANS/RELAY SITES.				
		G6 PROVIDES 5-DAY-GENERATED SOI.				
		SUBMIT TASKING THRU S3 TO REPLACE NMC COMMO.				
		FINALIZE COMMO EQT TO BRING FROM HOME STATION.				
		FINALIZE NTC SOI.				
		SUBMIT DRAW RAD, AMP, AND BAT BOX NUMBERS TO BDE.				
	C-11	CONDUCT COMMO EQUIP PCI TO ENSURE COMPLETENESS.				
		FINALIZE MSE PHONE BOOK.				
RSOI 1	C-5	ISSUE MSE PHONE BOOK TO UNITS.				
		MEET DAILY WITH SUBORDINATE BSOs & MSE REPRESENTATIVES TO DISCUSS COMMO ISSUES.				
		RADIO DRAW BEGINS.				
		SIGNAL O/Cs MEET WITH S6s AND COMMO CHIEFS.				
		PROVIDE OPS GROUP S6 WITH SOI AND PHONE BOOK.				
RSOI 3	C-3	ULLS GUNNERY IS CONDUCTED.				
RSOI 4	C-2	BCT COMMEX at 1500.				

Figure 1. Critical Event Timeline for Signal at the National Training Center. (U.S. Army, 25 May 1999.)

Part III
VISUALIZING THE BUILDUP OF COMMUNICATIONS POWER

During the RSOI week, the unit commander and his staff track combat systems, personnel, and classes of supply. Tracking of communications systems must also be an integral part of RSOI week. The commander's visualization of the brigade's communication posture is an RSOI essential element. Unit BSOs are the staff proponent who link and consolidate this data, informing commanders and staffs of the current and future communications posture. A tracking mechanism is essential to fuse this data for the commander.

Part IV
THE COMMEX

The unit's higher headquarters must conduct a COMMEX to confirm preparation for combat operations. This COMMEX is normally executed on RSOI 4. **Commanders set the tone for their unit while enforcing their intent for the COMMEX.** The BSO's COMMEX plan must include 100 percent of the brigade's communications resources. While the BSO plans and assists with the COMMEX, it is executed by the unit S3. COMMEX plans should be clearly understood by all participants. This is an important event that will shape unit success on the battlefield. "A WAY" to set up the net control station so that you can effectively track the COMMEX is shown at Figure 2, pages I-5 through I-8. After the COMMEX, the BSO must identify unit shortcomings and establish priorities to fix the shortfalls before move out. Units benefit if their COMMEX procedures are implemented as part of their TACSOP. A sample COMMEX timeline and tracking matrix is provided at Figure 3, page I-9.

THE COMMEX

"A WAY"

PURPOSE: TO CONFIRM ALL AVAILABLE COMMS AMONG C^2 ELEMENTS PRIOR TO A PENDING OPERATION.

EXECUTION: - DISSEMINATE THE PLAN/COORDINATE 24 HOURS IN ADVANCE.

- *** INCLUDE *ALL* STATIONS.**
- *** ENSURE STATIONS CONDUCT CHECKS FROM BATTLE POSITIONS - INITIAL AND SUBSEQUENT (IF POSSIBLE).**
- *** TEST ALL MEANS - FM (THROUGH RETRANS), MSE, EPLRS, TACSAT, AND FACSIMILE.**
- *** DELINEATE CONNECTIVITY TO BE TESTED.**
- *** IDENTIFY INITIATOR OF CALLS FOR EACH NET.**
- *** ASSIGN FREQ/NET IDs TO EACH STATION (INCLUDE RETRANS FREQUENCIES).**
- *** APPOINT PERSON(s) TO RECORD RESULTS.**
- *** INITIATE CORRECTIVE ACTIONS AS REQUIRED.**

**** COMMEX PROCEDURES SHOULD BE INCORPORATED INTO THE TACSOP!!***

TRAIN THE FORCE

DELINEATE THE CONNECTIVITY

"A WAY" (Cont)

1. FM COMMUNICATIONS:

   A. BDE CMD NET: THE S3 SECTION WILL INITIATE RADIO CHECKS WITH THE FOLLOWING STATIONS. S3 SECTION WILL USE RETRANS NET ID, ALL OTHER STATIONS WILL BE ON THE PRIMARY NET ID.

   * BDE TAC
   * BDE CDR (TRACK/HMMWV)
   * TF IN TOC/TAC/CDR
   * TF AR TOC/TAC/CDR
   * TF AVN TOC/TAC/CDR
   * FA BN TOC/TAC/CDR

   B. BDE O&I NET: THE S2 SECTION WILL INITIATE RADIO CHECKS WITH THE FOLLOWING STATIONS. S2 SECTION WILL USE RETRANS NET ID. ALL OTHERS WILL BE ON THE NORMAL NET ID.

   * BDE TAC
   * BDE CDR (TRACK/HMMWV)
   * TF IN TOC/TAC/CDR
   * TF AR TOC/TAC/CDR
   * TF AVN TOC/TAC/CDR
   * FA BN TOC/TAC/CDR

DELINEATE THE CONNECTIVITY

"A WAY" (Cont)

2. MSE COMMUNICATIONS:

A. DNVT/DSVT/MSRT: THE BDE S3 SECTION WILL CALL EACH OF THE FOLLOWING PHONES. EACH CALLED PARTY WILL IMMEDIATELY PLACE A RETURN CALL TO THE S3.

- **BDE CDR (MSRT)**
- **BDE XO (MSRT)**
- **BDE S1/S4 (DNVT)**
- **BDE S4 (MSRT)**
- **BDE TAC (MSRT)**
- **TF IN TOC (MSRT)**
- **TF IN ALOC (MSRT)**
- **TF AR TOC (MSRT)**
- **TF AR ALOC (MSRT)**
- **FA BN CDR (MSRT)**
- **FA BN S3 OPS (DNVT)**
- **AVN BN TOC (DNVT)**
- **AVN BN TOC (MSRT)**

B. FAX: THE BDE S3 WILL SEND A TEST FAX TO THE FOLLOWING STATIONS. EACH STATION WILL IMMEDIATELY RETURN A TEST FAX TO THE BDE S3.

- **BDE S2 FAX**
- **BDE S1/S4 FAX**
- **FA BN FAX**
- **EN BN FAX**
- **TF IN FAX**
- **TF AR FAX**
- **AVN BN FAX**

C. CONFERENCE CALL. BDE S-3 INITIATES CONFERENCE CALL IAW SOP.

DELINEATE THE CONNECTIVITY

"A WAY" (Cont)

3. EPLRS:

A. SITUATIONAL AWARENESS. BDE S3 SECTION WILL VERIFY THAT ALL UNITS ARE REPRESENTED BY AN ICON ON THE SITUATIONAL AWARENESS TERMINAL (SAT) AND THAT DISPLAYED LOCATIONS ARE ACCURATE. S3 SECTION WILL ALSO VERIFY THAT GRAPHICS ARE ACCURATELY DISPLAYED.

B. COMMUNICATIONS: BDE S3 SECTION WILL SEND A TEST PRE-FORMATTED OR FREE-TEXT MESSAGE TO SATs LISTED BELOW. EACH SUBORDINATE SAT WILL SEND A RETURN MESSAGE TO THE BDE S3 SAT.

* BDE TAC
* EN BN
* ADA BATTERY
* TF IN
* AVN BN
* TF AR
* AVN BN

C. EACH COLT WILL SEND A TEST SPOT REPORT TO THE FSE VIA EPLRS.

4. S/C TACSAT: BDE S-3 CONDUCTS RADIO CHECKS WITH ALL S/C TACSAT STATIONS.

RSOI 4 COMMEX, 1500 BCT COMMUNICATIONS EXERCISE												
#	EVENT	SYSTEM	INITIATOR	BCT TOC	BCT TAC	BCT REAR	BCT RTRNS	TF AR	TF IN	FA TF	AVN TF	COLTS
1	OPEN BCT CMD NET.	FM	BCT TOC (S-3)	X	X	X		X	X	X	X	
	NOTE: NCS CONDUCTS NET CALL.											
2	OPEN BCT O&I NET.	FM	BCT TOC (S-2)	X	X	X		X	X	X	X	
	NOTE: NCS CONDUCTS NET CALL.											
3	OPEN FSB CMD NET AND BCT A&L NET.	FM	BCT REAR (S-4)	X		X		X	X	X	X	
	NOTE: NCS CONDUCTS NET CALL.											
4	OPEN BCT FS NET.	FM	BCT TOC (FSE)	X	X			X	X	X	X	X
	NOTE: NCS CONDUCTS NET CALL.											
5	OPEN TF/SEP CO CMD NETS.	FM	TF TOC, CO CP					X	X	X	X	
	NOTE: NCS CONDUCTS NET CALL.											
6	OPEN TF O&I NETS.	FM	TF TOC (S-2)					X	X	X	X	
	NOTE: NCS CONDUCTS NET CALL.											
7	OPEN TF A&L NETS.	FM	TF CTCP					X	X	X	X	
	NOTE: NCS CONDUCTS NET CALL.											
8	OPEN TF FS NETS.	FM	TF TOC (FSE)					X	X	X		
	NOTE: NCS CONDUCTS NET CALL.											
9	PASS DIGITAL MESSAGE ON FD 1, 2, 3.	FM	BCT/TF TOC (FSE)	X	X			X	X	X	X	X
	NOTE: IFSAS TEST MESSAGE IS SENT FROM BCT TO TF TO CO.											
10	BCT /TF MSRT CHECKS.	MSE	BCT TOC (S-3)	X	X	X		X	X	X	X	
	NOTE: ALL BCT AND TF MSRTS ARE CALLED AND RETURN CALL IS MADE.											
11	SEPARATE COMPANY MSRT CHECKS.	MSE	BCT TOC (S-3)									
	NOTE: ALL SEPARATE COMPANY MSRTS ARE CALLED AND RETURN CALL IS PLACED.											
12	MSE FACSIMILE CHECKS.	MSE	BCT TOC (S-3)	X	X	X		X	X	X	X	
	NOTE: TEST FAX IS SENT TO ALL FACSIMILES AND RETURN FAX IS RECEIVED											
13	EPLRS RADIO CHECKS.	EPLRS	BCT TOC (COMMO)	X	X	X		X	X	X	X	
	NOTE: TEST MESSAGE IS SENT TO ALL SAT TERMINALS, AND COLTS.											
14	EPLRS FADC3I SYSTEM CHECKS.	EPLRS	BCT TOC (ADA)									
	NOTE: TEST MESSAGE IS SENT FROM ALL SENSORS TO ALL SHOOTERS.											
15	SINGLE-CHANNEL TACSAT RADIO CHECKS.	S/C TACSAT	BCT TOC	X				X	X			X
	NOTE: BCT (NCS) CALLS ALL STATIONS.											
16	BCT/TF RETRANS CHECKS.	FM	BCT/TF TOC (COMMO)	X			X	X	X	X	X	X
	NOTE: RADIO CHECK IS MADE TO ALL RETRANS TEAMS AND THROUGH THE SYSTEMS											

Chapter 2: PLANNING OF TACTICAL COMMUNICATIONS

Part I
COMMUNICATIONS PLANNING

The best communications plan in the world will not do any good if the BSO is the only one who understands it. BSOs must remember that the supported unit is not focused on communications. The BSO serves as the bridge to bring the commander and staffs to a clear understanding of the unit's communications architecture and how they will communicate on the battlefield. BSOs influence communications using the signal annex and Combined Arms Rehearsals (CARs).

Part II
BSO SIGNAL ANNEX

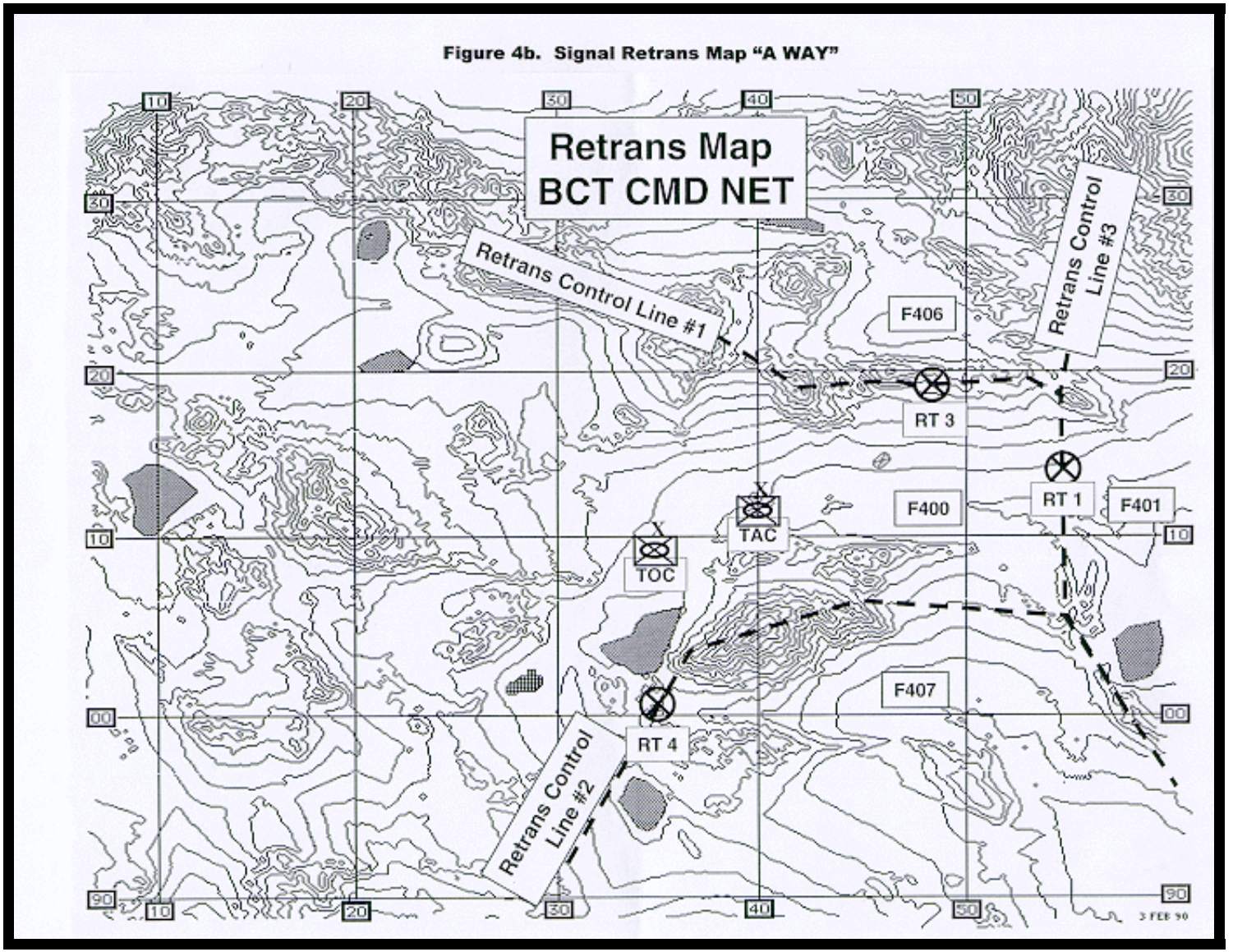
BSOs must improve the quality of their signal annex. This step will assist units with the incorporation of signal planning. BSOs must work with other staff elements to improve their communications planning and execution while they work bottom-up refinements throughout the battlefield. Frequently NTC O/Cs report that units have a minimal understanding of the communications plan and no means to overcome communications challenges.

The signal annex is an essential element of a military operations order (OPORD). A number of styles of information presentation are effective: plain text, preformatted templates, and matrixes. The annex must incorporate all communications resources. Providing a signal concept sketch to the commander works best. The graphic presentation provides the commander with a clear and concise understanding of the communications plan. Several critical information elements are: Concept of communications; CP locations (primary and alternate); RETRANS locations (including RETRANS signal architecture); and RAU coverage. As with any OPORD, subordinate units must have their higher unit's signal annex.

Figures 4a and 4b provide a picture of the very details that should be included in the signal annex. Accurate portrayal of the communications architecture is very important.

	EVENT	R&S	LD	CAV ENTERS	CAV EXITS
C2 NODE				VALLEY OF DEATH	VALLEY OF DEATH
TOC	LOCATION	NV350090	NV350090	NV350090	NV350090
	FREQUENCY USED FOR BDE CMD	400	400	400	400
	FREQUENCY USED FOR DIV CMD	100	100	100	100
	MOVEMENT TRIGGER				
TAC	LOCATION	NV404129	NV404129	NV404129	NV404129
	FREQUENCY USED FOR BDE CMD	400	400	400	400
	FREQUENCY USED FOR DIV CMD	100	100	100	100
	MOVEMENT TRIGGER				
REAR	LOCATION	BSA	BSA	BSA	BSA
	FREQUENCY USED FOR BDE CMD	400	400	400	400
	RETRANS UTILIZED				
RETRANS1	LOCATION		ROZ1	ROZ1	ROZ2
(C2 BIRD)	FREQUENCY/RTS FREQUENCY		400/401	400/401	400/401
	MOVEMENT TRIGGER				
RETRANS2	LOCATION	LINK UP W/CAV	FOLLOWS CAV	FOLLOWS CAV	FOLLOWS CAV
	FREQUENCY/RTS FREQUENCY		407/408	407/408	407/408
	MOVEMENT TRIGGER				
RETRANS3	LOCATION	NV483195	NV483195	NV483195	NV483195
	FREQUENCY/RTS FREQUENCY	400/406	400/406	400/406	400/406
	MOVEMENT TRIGGER				
RETRANS4	LOCATION		NV349012	NV349012	NV349012
	FREQUENCY/RTS FREQUENCY		400/407	400/407	400/407
	MOVEMENT TRIGGER				

Figure 4b. Signal Retrans Map "A WAY"



Part III
SIGNAL CROSS TALK AND PLANNING REFINEMENT

Cross talk and planning refinement from the brigade BSO to subordinate BSOs is often nonexistent throughout an NTC campaign. The results are an unsynchronized community of signal personnel who are often out of touch with signal plan revisions and frequently unaware of the location of other signal resources on the battlefield. Several procedures can be implemented to overcome this shortfall. BSOs should make every effort to conduct conference calls on MSE and FM. Standardized reporting times can work well, but require deconfliction. The following three techniques work well:

1. Maximize BSO participation at the BCT combined arms rehearsal (CAR). The CAR is the one time subordinate units are on the same timeline as the brigade. Unit commanders, S3s, XOs, and FSOs are held accountable for their presence at this critical event. The CAR is an excellent opportunity for the brigade BSO and other units BSOs to cross-talk and come to closure on changes and/or revisions to the signal plan. Often the maneuver plan is modified during the CAR. If the brigade and battalion BSOs are present, they can address the impact of these changes on communications. BSOs can and should coordinate with each other during this time. This is also a good time to link up RETRANS teams with their respective unit movement assignments.

2. At least twice daily, units track combat power, classes of supply, and sensitive items using reporting procedures established by their TACSOPs. These reports help the brigades maintain situational awareness and increase accountability. The BSOs must add a chart we've called the Orange Report to their SOP. This Orange Report accounts for each communication system in the unit. While formats can be very generic, they should be standard throughout the brigade and cover 100 percent of the systems. Each communications system should have their own line number. Reports can be sent via FM, TACSAT, MSE voice, or digitally through TACLAN, EPLRS, or tactical facsimile. Units submit the Orange Report to the brigade signal section twice daily or as required by the unit TACSOP. A sample Orange Report is shown at Figure 5 below.

Orange Report

		TF IN		*TF AR*		*FA BN*		*AVN BN*	
LINE NO.	**SYSTEM**	**MC**	**O/H**	**MC**	**O/H**	**MC**	**O/H**	**MC**	**O/H**
1	FM RETRANS								
2	S/C TACSAT								
3	EPLRS RADIO								
4	EPLRS SAT								
5	DNVT								
6	MSRT								
7	TACLAN								
8	MSE FACSIMILE								

Figure 5. Communications Equipment Tracking Report (Orange Report)

3. Tracking communications resources across the battlefield is the BSO's primary challenge. Effective battle tracking starts during the planning and preparation process. Brigade BSOs must implement a process of bottom-up refinement of the signal plan working through their subordinate BSOs. How do you do that? Battalion BSOs get their initial copy of the brigade's RETRANS plan in the brigade OPORD. As subordinate BSOs go through their MDMP, a refined copy of the planning matrix is forwarded to the brigade BSO for consolidation. Once the data is refined and consolidated, a copy is sent back to the subordinate BSOs. The chart at Figure 6 on page I-15 can be used for bottom-up refinement or as an internal planning tool for your own signal section.

MISSION/ DATE:	DELIBERATE ATTACK						
UNIT	BCT	TF IN	TF AR	TF AVN	TF ENG	DS FA	RF FA
	RTN #1	RTN #1	RTN #1	RTN #1	RTN #1	RTN #1	RTN #1
RTN #1 PLAN LOC/HOPSET	NV 502964 HS 500	NV 486973 HS 580	SET AT TOC	NU 383985 HS 714			
VRC-92 RTNs O/H AVAILABLE	1 / 0	1 / 0	1 / 1	2 / 1			
NFA	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N
CASEVAC AXP	NV 533 954	NV 493 921					
	RTN #2	RTN #2	RTN #2	RTN #2	RTN #2	RTN #2	RTN #2
RTN #2 PLAN LOC/ HOPSET							
VRC-92 RTNs O/H AVAILABLE							
NFA	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N
CASEVAC (AXP)							
	RTN #3	RTN #3	RTN #3	RTN #3	RTN #3	RTN #3	RTN #3
RTN #3 PLAN LOC/HOPSET							
VRC-92 RTNs O/H AVAILABLE							
NFA	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N
CASEVAC (AXP)							

Part IV
TIPS FOR THE MDMP

BSOs must fully understand the Military Decision-Making Process (MDMP) as outlined in FM 101-5. The remainder of this chapter highlights areas within the MDMP that BSOs typically overlook. When developing a communications plan, be sure to incorporate **PACE** (Primary, Alternate, Contingency and Emergency) into all levels of primary signal operations. The following considerations are shown in a checklist format:

Part V
GENERAL SIGNAL PLANNING CONSIDERATIONS

__ Pay attention to the details of the wargaming process.

__ Verify that the scheme of maneuver does not take supported units outside your communications coverage.

__ Develop contingencies for every possible COA. If division gave you a be-prepared, on-order, or a follow-on mission, the BSO must be prepared to execute the mission.

Part VI
GETTING STARTED IN THE PLANNING PROCESS

Before the MDMP process begins, the BSO needs to get into the wargaming fight. Follow the posted timeline and prepare yourself for wargaming. Bring everything to the table, including RETRANS icons, C^2 node icons, and Remote RAU icons. Other tools required:

__ Map of brigade AO.

__ String to replicate 15km RAU footprint.

__ Permanent markers: blue, black, and red.

__ Straight-edged military ruler.

__ Terrabase LOS program.

__ Laptop PC for producing paragraph 5 and the signal annex of your brigade OPORD.

Part VII
MISSION ANALYSIS BRIEF

BSOs often struggle over their mission analysis brief. Brief the following to your commander, XO, S3, and staff:

__ Furnish a visual chart showing the brigade's current communications posture.

__ Provide the commander and staff an overview of the critical communication points in your area of operation. Examine the width and depth of the brigade's battlespace in detail.

__ Use Terrabase products to inform the commander of the communications dead spots in their battle space. Account for all brigade communication assets.

__ Clearly and emphatically identify constraints or limitations.

__ Portray potential signal sites for RETRANS and RAU coverage using Terrabase products.

__ Display the locations of your higher headquarters' C^2 nodes. Identify dead spaces affecting higher to lower communications.

Chapter 3: SYNCHRONIZING AND INTEGRATING COMMUNICATIONS ASSETS DURING THE WARGAMING PROCESS

Part I
WHAT TO BRING TO THE WARGAMING TABLE

Before you get to the wargame, you must have selected your signal COA, proposed C^2 nodes, and designed your communications architecture. As the wargaming session goes on, it is imperative that C^3 is part of the synchronization matrix. Use the wargaming session to integrate and synchronize the brigade's critical C^2 nodes with the communications assets that support the brigade's scheme of maneuver.

The BSO and staff must have a clear understanding of the brigade's time/space relation of its movement table and where the brigade plans to fight the enemy.

This action is important so the communications conditions can be set at the critical point on the battlefield and meet the commander's C^3 intent.

Part II
BEFORE WARGAMING BEGINS

__ Understand the commander's intent.

__ Complete terrain analysis.

__ Identify dead space.

__ Identify tentative C^2 nodes and organic signal system locations.

__ Plan C^2 node and signal system location of higher headquarter (ensure NFAs are provided to the fire support element).

__ Roll-up of signal systems available.

__ Be aware of identified constraints and limitation you have for the mission.

Part III
ACTIONS DURING WARGAMING

__ Identify C^2 requirements by phase of the operation beginning with the R & S effort.

__ Ensure the C^3 requirements are synchronized and integrated with the scheme of maneuver.

__ Get C^3 information on the synchronization matrix.

__ What are the FM net priorities: CMD, O/I, Fire Support or A/L?

__ What is the priority for redundancy? What is the focus of support FM, MSE EPLRS, and NTDR?

Part IV
ACTIONS AFTER THE WARGAMING IS COMPLETE

__ Monitor the troop-leading procedures being conducted with communications chiefs and RETRANS teams.

__ Develop a signal annex.

__ Get prepared for briefing paragraph five and the concept for signal during the orders brief.

Part V
RETRANS PLANNING CONSIDERATIONS

__ What types of RETRANS systems are needed for the brigade's mission: ground RETRANS, air RETRANS platform, C^2 bird platform, and/or dismount RETRANS teams?

__ What is the primary net for RETRANS?

__ What is the trigger for executing RETRANS operations?

__ What is the timeline for the RETRANS to get to its location and with whom will it deploy?

__ What is the security plan for RETRANS?

__ Once the primary RETRANS mission is complete, what is its alternate mission?

__ Identify contingencies (PACE) for success or failure of the RETRANS mission.

__ What is the threat to the RETRANS teams? Conduct a thorough IPB.

Part VI
INCORPERATING RETRANS TEAMS IN TROOP-LEADING PROCEDURES (TLPs)

Time management is a challenge for the BSO and the communications chief. The BSO and the communications chief must parallel-plan during the unit's planning process to allow RETRANS teams the necessary time to plan, prepare and execute their mission. It is essential that the signal planning remain a half step ahead of the unit planning process. This action will allow you and your teams to be well into the troop-leading procedures when the unit continues in the planning process. Use the flow chart and checklists at Figures 7 through 9 to improve time management. The parallel planning process will allow more time for the RETRANS teams to prepare for their mission. Even if RETRANS teams are in continuous operations, a good WARNO followed by a FRAGO will adequately prepare them for their next mission.

UNIT	BDE/BN S6	COMMO CHIEF
Receive the mission.	Issue the warning order. Make a tentative plan. Anticipate the CDR's intent.	Prepare troops for their mission. Conduct PCC/PCIs.
Issue the warning order.	Conduct IPB. Mission analysis Preparation.	Confirm the signal architecture & provide feedback.
Make a tentative plan.	Initiate movement. Conduct reconnaissance.	Execute and track movement. Coordinate with adjacent units.
Initiate movement.	Complete the plan with NCOs. Distribute FRAGOs.	Complete the signal plan with the S6. Follow up with subordinate signal elements.
Conduct reconnaissance.	Confirm signal architecture. Issue the order.	Continue to coordinate and exchange information with S6.
Complete the plan.	Supervise and refine.	Supervise and refine.
Issue the order.	Rehearse.	Rehearse RETRANS teams.
Supervise and refine.		Account for personnel and equipment.

SITUATION

Enemy: _____

_____

_____

Friendly: _____

_____

_____

Chemical threat & MOPP posture: _____

_____

_____

MISSION

Brigade mission: _____

_____

_____

_____

RETRANS mission: _____

_____

_____

_____

EXECUTION

	EVENT	R&S	LD	TF AR	TF IN
C^2 NODE					
TOC	LOCATION				
	FREQUENCY USED FOR BDE CMD				
	FREQUENCY USED FOR DIV CMD				
	MOVEMENT TRIGGER				
TAC	LOCATION				
	FREQUENCY USED FOR BDE CMD				
	FREQUENCY USED FOR DIV CMD				
	MOVEMENT TRIGGER				
REAR	LOCATION				
	FREQUENCY USED FOR BDE CMD				
	RETRANS UTILIZED				
RTNS No. 1 (C^2 BIRD)	LOCATION				
	FREQUENCY/RTS FREQUENCY				
	MOVEMENT TRIGGER				
RTNS No. 2	LOCATION				
	FREQUENCY/RTS FREQUENCY				
	MOVEMENT TRIGGER				
RTNS No. 3	LOCATION				
	FREQUENCY/RTS FREQUENCY				
	MOVEMENT TRIGGER				

Route of march: _____
_____
_____
OPCON for movement:
RETRANS No. 1:
_____
_____

RETRANS No. 2:
_____
_____

RETRANS No. 3
_____
_____

Engagement criteria/instructions: _____
_____
_____

SERVICE AND SUPPORT

Casualty evacuation plan: _____
_____

Aid station: _____ Alternate Aid location: _____

DECON site: _____ Alternate DECON site: _____

Brigade TOC location: _____ Alternate location: _____

Brigade TAC location: _____ Alternate location: _____

Re-supply instructions: _____
_____
_____

COMMAND AND SIGNAL

Edition: _____ of SOI in effect
Frequency change at _____ hours local/Zulu time
SOI/CCI data destruction procedures: _____
_____
_____

PMCS		**NBC**		**WEAPONS**	
On-Hand		Complete MOPP		Cleaned	
Complete		M8/9 Paper		Test-fired	
PLL parts		M256 Kits		Zeroed	
FUEL/POL		**CCI**		Class V on hand	
Topped Off		Accounted for		**CBT LIFESAVER**	
3 days of Fuel		**FREQUENCIES**		1 ea soldier certified	
3 days of POL		Anti-Jam plan		Complete bag	
CAMMO NETS		Interference Plan			
Complete		All Freq's Tested			
C & E		**MISSION BRIEF**			
Radio Checks		OPORD			
OE-254 Checks		Map on hand			
Retrans Checks		Graphics on hand			
GPS Checks		Mission understood			
Freq's Pretest		Route specified			
SUPPLIES		Operational time			
Food on hand		CASEVAC plan			
Water on hand		DECON Point			
TA-50 on hand		NFAs established			
Re-supply		ROE understood			
Destruction proc					
Escape plan					

Part VII
BRIEFING THE CONCEPT OF SIGNAL AT OPORDs AND REHEARSALS

The BSO's largest challenge out on the battlefield is to ensure every leader and soldier clearly understands the communications architecture to support the brigade/battalion scheme of maneuver. OPORD briefs and rehearsals are the means where the BSO must drive home his/her communications plan. There are several techniques, but what's important is that commanders and soldiers leave the sandtable knowing how they will communicate with their commanders and subordinates. Listed below at ***** are key areas the BSO must address during this important occasion.

Part VIII
OPORD BRIEF CONSIDERATIONS

__ Have acetate prepared to post onto the maneuver graphics board with RAU coverage ranges, proposed RETRANS locations, proposed unit C^2 node locations and planned trigger line for RETRANS operations.

__ Always position yourself at the briefing board and physically point to key terrain and key communications locations that pertain to the unit's battlespace.

***** Address the following areas in the OPORD brief:
- __ Communications architecture plan.
- __ RETRANS plan to include triggers.
- __ RAU coverage plan.
- __ MSE support plan.
- __ C^2 node location and movement plan.
- __ Commander and S3 on the battlefield.
- __ Anti-Jam plan.
- __ Paragraph 5.

Part IX
REHEARSALS

There are no additional considerations to the unit rehearsals. It is important that the BSO physically show where communications assets and C^2 nodes are employed on the battlefield. A technique observed is drawing a communications concept sketch on a 3X5 or 5X7 card for each commander. The sketch is provided before the BSO begins his portion of the rehearsal. This allows the commanders to review the sketches as the BSO rehearses his communications architecture plan.

Part X
C² NODE PLANNING CONSIDERATIONS

__ Identify where higher headquarters C^2 nodes and communications assets are located on the battlefield.

__ Identify the primary and alternate locations of the unit's C^2 nodes: TOC, TAC, Assault CP and commander.

__ Identify the critical events in the battle that the C^2 nodes must be set to support the commander. Conduct time-distance analysis to ensure C^2 nodes are set at the right time and place.

__ Analyze proposed C^2 node locations to ensure the following:
- __ The TOC is within RAU coverage.
- __ The TOC is within EPLRS connectivity range.
- __ Higher headquarter can communicate from the proposed location.

__ The signal architecture design plan extends from the C^2 node to the most forward element based on signal doctrine, higher to lower.

__ Identify triggers for moving C^2 nodes. This action must be synchronized with communications assets employed on the battlefield.

Part XI
OFFENSIVE AND DEFENSIVE PLANNING CONSIDERATIONS

Certain offensive and defensive signal planning considerations are key to the BSOs success in planning for a solid signal architecture. The planning considerations listed below must be second nature to the BSO. He must consider these areas at a minimum during the planning process. These are often overlooked. There are many other signal planning factors in addition to the ones listed below.

OFFENSE

__ Has the BSO conducted a thorough map reconnaissance and examined the brigade/battalion width and depth of the assigned battlespace?

__ How far behind the LD is the TOC and TAC?

__ Does the C^2 movement plan place the C^2 nodes on the battlefield at the critical time required to support the commander?

__ Is there a contingency plan to support the R&S effort if the primary means fails?

__ Does the communications plan extend beyond the objective, and does it effectively support seamless communications for the fight?

__ Is the command net the critical net for all phases of the operations or should the unit prioritize other nets, such as O/I, FSE and/or A/L?

PASSAGE OF LINES (POL)

__ Collocate C^2 nodes.

__ Identify the nets on which the coordination and POL will take place.

__ Ensure signal asset locations are passed to the unit moving forward through the POL.

SCREEN/COUNTER RECON/COLTS

__ Identify the primary, alternate, contingency, and emergency communications plan for communicating with the unit's deep eyes.

__ Review closely the depth and width of the battlefield. Reconnaissance elements are always employed deep in zone.

__ Are the RETRANS teams or communications assets assigned NAIs?

DEFENSE

__ Is the TOC located on a primary avenue of approach for the enemy? Are you on enemy's objective?

__ Does the TOC have a displacement plan?

__ Is there a jump TOC plan?

__ Are signal assets employed on the battlefield in the right location to support C^2 nodes during repositioning?

__ Does the displacement plan take your TOC through friendly maneuver positions, i.e., engagement areas, attack-by-fire positions, planned situational obstacles and artillery firing positions?

__ Are the RETRANS teams well-rehearsed with the counter-reconnaissance company to conduct a successful rearward passage of line? Do they know the return route through the main defensive obstacles?

SECTION II
A SUCCESSFUL MSE NETWORK BY THE NUMBERS

Chapter 1: PLANNING A SUCCESSFUL MSE NETWORK

Part I
THE MILITARY DECISION-MAKING PROCESS IN A SIGNAL UNIT

The Military Decision-Making Process (MDMP) is a tool used to solve complex problems by breaking them down into their component parts. The U.S. Army has adopted this method to plan complex military operations. FM 101-5, Chapter 5, states that the MDMP produces the greatest integration, coordination, and synchronization for an operation and minimizes the risk of overlooking a critical aspect of the operation. All signal units must use and practice the MDMP. All too often, the "Signal Plan" is the work of one great mind, rather than capturing the input of many great minds. The following discussion focuses on how to use the MDMP to plan a successful signal operation at the National Training Center.

STEP I. Receipt of Mission.

Often taken for granted, this step is sometimes hard to accomplish successfully. Signal units not used to working with brigades may not know the brigade's battle rhythm. Signal units must participate in the brigades' decision-making process. The Signal Company must synchronize its battle rhythm with the brigade's to assure they do not miss key events. The use of the Signal unit LO is an effective way to accomplish this. The items listed below are critical to accomplishing this first step in the MDMP.

Be there when the brigade issues its order.
Get a copy of the brigade's order.
Get a copy of the brigade's maneuver graphics.
Understand the Division and Brigade Commander's Intent.
Read and understand the brigade's SOP, specifically the Command and Control SOP and the Reporting SOP.

STEP II. Mission Analysis.

The second step in the MDMP is to perform the mission analysis. Although this is arguably the most important step, it is often the most overlooked. What is the mission of the MSE Signal Company? To provide MSE communications for the Brigade Combat Team. Sounds simple, but that entails so much more. What does it mean to provide MSE communications? In mission analysis, Signal planners must fully define the problem at hand. Identify restrictions/limitations, and any assumptions.

The signal mission can be better stated as "To provide MSE communications at the right time and at the right place on the battlefield." We must know when and where the Decisive Point on the battlefield is. To do this, one must understand the Brigade's scheme of maneuver. ***"SIGNALEERS" MUST UNDERSTAND MANUEVER!*** We must MASS our MSE assets at that decisive point to provide the necessary redundancy. Mission Analysis is further broken down into the following steps:

a. Analyze the Brigade's Order.

What is the Brigade Commander's Intent?
What is the Brigade's Scheme of maneuver?
When and where is the decisive point on the battlefield?
What are the Brigade's constraints and limitations?
What is the Brigade's AO?
What is the Brigade's Scheme of C^2?
Where are the Brigade's C^2 nodes located?
When and where are they jumping?
Where are the Commanders and S3s located?
When and where are they moving? How are they going?
To Whom do they need to talk?
When is it critical to the success of the operation that they all communicate?

b. Conduct IPB.

What, When and Where are the threats to our Signal Units? **Consider:** **OPFOR reconnaissance elements.** **OPFOR Guerilla Forces.** **NBC Threat.** **Air Threat.**
How do the different enemy COAs threaten us?
Do a thorough terrain analysis.
Update the IPB continuously.

c. Determine specified, implied, and essential tasks.

A specified task may be "Provide MSE comms at the BCT TOC."
An implied task may be "Provide RAU coverage for Task Force Commander's, TOCs, and S3s."
MSE comms at the Brigade's decision points may be an essential task.

d. Review Available Assets.

What equipment and teams are fully mission capable?
What equipment and teams have SHF? CNRI?
What teams are partially mission capable? Bad radio, cable.
What frequencies are available?

e. Determine constraints.

When can we cross the LD?
What is the limit of advance?
What terrain is off limits?
What are our boundaries?
Any frequency constraints? RF power constraints?

f. Identify critical facts and assumptions.

What effects will they have on the signal plan?
For example: FACT: The OPFOR can DF and jam MSRT frequencies.
ASSUMPTIONS: The OPFOR cannot DF or jam Band I and Band III frequencies.
Remember your assumptions' equal risks.

g. Conduct Risk Analysis.

Consider both Safety and Operational Risks.
Example of Operational Risk may be having an LOS relay on an internodal link, or emplacing a signal site forward of the FEBA or LD.

h. Determine initial Commander's Critical Information Requirements (CCIRs).

The Signal Commander's CCIRs are linked to a specific decision point. For example: What must happen before a RAU team jumps forward? The answer may be a specific Task Force reaches its objective or a phase line. This becomes the CCIRs for the Signal Company.

i. Determine the initial reconnaissance.

Consider Route and Signal Site reconnaissance.
Who will conduct it?
When will they conduct the reconnaissance?
Did we give them enough time to do a thorough reconnaissance?
Signal Site reconnaissance is the basis for network flexibility and site defense. See Part III for checklist.

j. Plan use of available time.

Make the planning timeline.
Remember the 1/3-2/3 rule.

k. Write the restated mission.

Who, What, Where, When, How, and Why.

l. Conduct a mission analysis briefing.

Mission and intent of Brigade and Division.
Brigade's concept of the operation.
Review Signal Commander's initial guidance.
Initial IPB products.
Specified, implied and essential tasks.
Constraints on the operation.
Signal Forces/assets available.
Hazards and Risks (Include all assumptions).
Recommended initial CCIR.
Timeline.
Restated mission.

m. Approve the restated mission.

Commander decides after mission analysis brief.

n. Develop the initial commander's intent.

Clear concise statement of what we must do to successfully accomplish our communications mission.

o. Issue the Commander's guidance.

The signal commander focuses on essential supporting tasks that support mission accomplishment. Appendix B of FM 101-5 provides information that can be included.

p. Issue the Warning Order.

The restated mission.
The Commander's Intent.
Sketch of the Area of Operations.
The CCIR.
Risk guidance.
Reconnaissance to be initiated.
Security measures.
Deception guidance.
Mobility and counter-mobility guidance.
Priorities of work/planning.
Timeline.
Guidance on rehearsals.

q. Review Facts and Assumptions.

Throughout the planning process, continue to review facts and assumptions to ensure they are still valid and accurate.

STEP III. Course-of-Action Development.

Generally, different courses of actions will have different network diagrams or different schemes of maneuver for signal units and teams.

The COA sketch is a combination of the Network Diagram and timeline for moving signal assets.

The COA brief will include the following:

Updated Intelligence Estimate.
Possible Enemy COAs.
Restated Mission.
Brigade's and Signal Commander's Intent.
Brigade's Scheme of Maneuver.
COA Network Diagram/Sketch.
COA explanation.
Updated facts and assumptions.

STEP IV. Course-of-Action Analysis (Wargame Signal).

Evaluation criteria are based on principles of war, doctrinal fundamentals, commander's guidance.

Must step through the Brigade's scheme of maneuver to determine critical events and decision points for the communications plan.

Must portray realistic, aggressive OPFOR to determine the flexibility of the communications plan and our reactions.

Results of wargame should include:

Identifying on-order and be-prepared missions.
A thorough synchronization matrix.
Identifying key terrain.
Identifying and refining decision points, triggers and CCIRs.
Refining Task Organization.
Identifying most dangerous enemy.
COA.
Identifying critical events.
Determining movement time and tables.
Identifying additional hazards and conducting risk assessment.

STEP V. Commander's Decision Briefing.

Commander's Intent two levels up.
The restated mission.
Status of own forces.
Updated IPB.
Brief all COAs and results of Wargaming. **Assumptions.** **Results of Staff Estimates.** **Advantages/Disadvantages.**
Recommended COA.
Decision Matrix.
Risk Assessment.

STEP VI. Course-of-Action Approval.

The Commander issues further guidance.
The Commander identifies any risk mitigation control measures.

STEP VII. Orders Production.

Upon approval of the COA, the unit should immediately prepare and distribute a FRAGO and, at a minimum, the Task Organization.

The Military Decision-Making Process is a powerful tool. When used by signal units at the National Training Center, a very detailed, synchronized signal operations order is produced. Differences between signal units and maneuver brigades require the process to be modified slightly, but the basic principles always apply. It is a skill that must be practiced at home station to be effective.

The following is an example of a one-page FRAGO that signal companies can use to disseminate critical signal information to all signal platoons and teams.

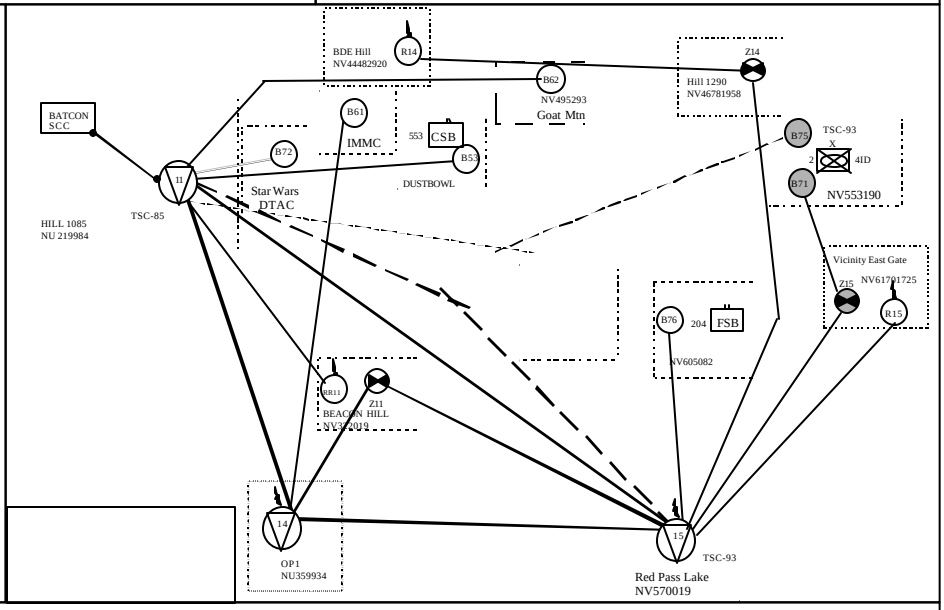
Situation: 2BCT - NV 553 190, 3/67-TBP, 1/5-TBP, 3/16-TBP, 1/44-TBP, 2/4AV-TBP, 204FSB-TBP.
Friendly Situation: 2BCT has secured OBJ Panther and Seahawk, and will continue to secure OBJ Cheetah (NV 3229), and establish Hasty Defense.

Mission: Relocate Z15, B71, and B75 to support 2BCT as they move North of the Johnny Miller Ridge.

Execution:

Site Locations:

NC11	NU 219 984
NC14	NU 359 934
NV15	NV 570 019
B71/B75	NV 553 190
Z15	NV 617 173
B76	NV 605 082
B72	NV 284 012
B53	NV 300 022
B61	NV 290 006
RR15	NV 617 172
RR14	NV 445 292
Z14	NV 468 196
RR11	NV 322 019
Z11	NV 322 019



Engineering Data:

LINE	TASK	SITE / LINK	XMIT	REC	AZ	POL	DTG	Remarks
1	Displace Z15	Hill 618					19 1800 May 99	
2	Displace B71/B75	Arrowhead					19 1800 May 99	
3	Open Link	11B75	TACSAT	TACSAT			19 1800 May 99	
4	Open Link	Z15B71	1375.000	1811.375	291M	H	19 1800 May 99	
5	Open Link	15Z15	301.625	232.375	18M	H	19 1800 May 99	

Coordinating Instructions:

1. Units update BATCON with eight-digit grids once set.
2. Risk Mitigation Control measures will be followed IAW Risk Assessment.
   a. Soldiers west of PL Colorado (NV 4792 - NV 5432) wear Kevlar and Flak Vest.
   b. One-hundred percent personnel accountability maintained at all times.
   c. CDR and 1SG issue safety brief to all soldiers moving west of PL Colorado.
   d. All movement requires O/C escort; coordinate all movement thru BATCON.
3. Z15 deploys with five DOS of Water, CL I, CL III.

Service Support: No Change.

Command: C CO CDR - NC 14

Signal: SOI ED B in effect
BN ENG NET: 58.475
BDE CMD NET: 66.225

ACKNOWLEDGE: SMITH, MAJ OFFICIAL: MYER, A.J.

Part II
THE SIGNAL LIAISON OFFICER (LO) TO THE MANUEVER BRIGADE

FM 101-5, Appendix L, goes into detail about the roles and responsibilities of the LO. It provides a checklist for the LO. The Signal LO to the Brigade TOC must be trained to be an LO. He should be familiar with FM 101-5. He is the eyes and the ears for the signal unit (the Signal Spy so to speak). He will also fight for the Signal unit. He will gather information, such as graphics and orders, and forward them to SYSCON for further analysis. A good LO can keep the SYSCON informed of the numerous changes that occur to the Brigade's Plan.

Who is the Signal Liaison Officer?

No signal unit is authorized an LO to each Brigade, nor can they afford to give up one soldier to perform these duties. The reality is we cannot afford **NOT** to provide an LO to the Maneuver Brigade. There are some options however:

1. The best option is to provide an experienced officer or senior NCO to the Brigade TOC to be the LO. A little rank also helps. The LO must be trusted to speak on behalf of the SYSCON and Commander. The LO must also know the limits of his authority. The LO should show up with the necessary supplies to copy Brigade graphics. The LO is very helpful in getting the Brigade Order and all the changes to the Brigade's Plan as they occur.
2. The BCT TOC SEN Team Chief as the LO. This works well sometimes, and sometimes it does not. It depends on the individual team chief and the team. The LO must have experience and be trusted to speak on behalf of the SYSCON or Commander. The LO must be aggressive and take the initiative to get the job done. The SEN Team must be able to function effectively with minimal supervision of the Team Chief since he will be tied up in the Brigade's Planning Process. Usually a strong assistant Team Chief can take care of business.
3. The Company Commander as the LO. It cannot be done. There is simply too much for the Commander to do. He cannot afford to spend all his time day and night at the Brigade TOC. Some units have had limited success by using the Commander as the LO, but only at the expense of his duties as commander. There are times when the Company Commander should be involved in the Brigade's planning process and should attend various meetings such as the Combined Arms Rehearsal and Brigade's order briefs.

Part III
THE SIGNAL SITE RECONNAISSANCE

FM 11-43, The Signal Leader's Guide, page 5-10, explains the Signal Site Reconnaissance in detail. It is the basis for network flexibility. The site reconnaissance is the initial step in planning for site security and force protection. A thorough Node Center site reconnaissance requires 1-2 hours on site to complete. Technical data for each shot should be taken with the reconnaissance party. At a minimum, the reconnaissance party must know approximately what azimuths their LOS shots will be.

A good SOP for the Node Center site reconnaissance should identify who conducts it, what they use to mark positions, and what vehicles are taken.

The Node Center Reconnaissance party should consider the following:

Initial LP/OP established.
Main Avenue of Approach identified.
Equipment/Shelters placed in low ground.
Antennas on high ground/concealed/masked.
Initial site defense established. **Perimeter identified.** **Crew-Served weapon positions identified.** **Rally Point established.** **Fighting position identified.**
Detailed site diagram completed.

Part IV
PLANNING CONSIDERATIONS IN THE OFFENSE AND DEFENSE

The Offense: Below are some specific considerations for planning MSE in support of an offensive operation. MSE is more difficult to plan and execute during the offense, because of the high tempo of heavy maneuver brigades.

When and where do we require RAU coverage?	
What is the initial set for our critical C^2 nodes and MSRT subscribers?	
When will they move forward, and where will they go?	
When and where is the decisive point on the battlefield?	
How do we push RAU coverage forward?	
Who controls the RAU movement forward? What is the Task Organization?	
What is the trigger for it to move? Is it synchronized with the Brigade?	
Have we coordinated with the Battalion Task Force who owns the land?	
No Fire Areas **CASEVAC** **Battalion Aid Stations**	**Security** **Air Defense Coverage** **Chemical Defense**
Has the RAU team chief attended the Task Force Rehearsal?	
Has the signal team linked up with the unit they are moving with?	
Do we have a primary and alternate location identified?	

There are different types of offensive operations. Generally, a movement to contact requires more flexibility because we do not know the exact disposition of the enemy. Can we jump a Node Center or a RAU to a hill 20 kilometers forward of the LD or will we get bogged down in the close fight 5 kilometers in front of the LD? We need to have plans for different contingencies.

The Defense: Planning an MSE Network for the defense is somewhat easier than the offense. You occupy the ground on which you fight. Doctrinally, we want to avoid putting MSE assets forward of the Forward Edge of the Battle Area (FEBA). Typically a remote RAU and possibly a SEN is forward of the FEBA. If your network is supporting a Division Cavalry Squadron, you can almost count on having assets forward of the FEBA. It is very important to know where all the friendly obstacles are located on the battlefield. Many obstacles are situational obstacles. The signal team forward of the FEBA does not want to get caught up in our friendly obstacles. The defense in sector is a temporary mission and is usually followed by a hasty attack. That will require additional planning. Here are some considerations for the defense.

When and Where is RAU coverage required?
What is the initial set of critical C^2 nodes and MSRT subscribers?
When will these C^2 nodes move and where will they move to?
Is there a passage of lines? Where is the passage point, and what is the SOP?
Where is the decisive point on the battlefield?
Where are the friendly obstacles located?
Where are the engagement areas (EA), and Close Air Support (CAS) target boxes?
Have teams forward of the FEBA coordinated with the Battalion Task Force?
Has the passage of lines been synchronized? Rehearsed?
Has the team chief attended the Task Force rehearsal?
Is there an NFA around the team? Do they have Air Defense coverage?
Where will the team get support for CASEVAC, Chemical Decontamination, and Security?
What is the trigger for the Team to break links, start movement, bug out, or hide?

TRUE STORY: One signal unit was planning for much success during the defense. They positioned their Node Center forward of the FEBA and in the middle of the Brigade's main engagement area. This was where the Brigade Commander had stated he intends to kill the enemy. The result was the Brigade took out the Node Center as well as the enemy.

One signal unit emplaced their Node Center well behind the FEBA; however, the Brigade had planned a situational obstacle that would prevent the enemy from flanking. Unfortunately, the Node Center was on the enemy side of the obstacle. The obstacle worked very well, and neither the enemy nor the Node Center got through the minefield.

Part V
PLANNING THE CONVOY

The checklist below gives some specific items to consider when planning the convoy. Significant network downtime is due to lost, separated or broken down vehicles and inadequate convoy planning. Do we have the wrecker with the convoy if available? Do we have fuel available in route? Remember the vehicle that breaks down or gets lost is going to be the one you need the most.

Situation, Friendly and Enemy	**Breakdown Procedures**
Mission Start Point and Destination	**Accident Procedures**
Order of March/Timeline	**Lost Vehicle Procedures**
Route and Alternate	**Ambush Procedures**
Halts/Checkpoints	**Security Force**
Night Operations	**Frequencies/Call Signs**
Interval/Dust Interval	**Required reports**
Speed/Catch-up Speed	**Convoy Commander location**
Road Hazards/Weather	**MEDEVAC Support**
Risk Assessment	**Combat Lifesaver location**
Defensive Driving	**Food, Fuel, Water, Class III**

TRUE STORY: One Signal Platoon planned a 35-kilometer convoy out to their new Node Center site located on Hill 1203. The Platoon Leader planned and gave a good convoy brief. During the convoy, two remote RAUs were to break off at a designated point and continue to Crash Hill and to the Yoda. Everyone knew where to go. At the last minute, the cooks joined into the convoy; they were told to follow the last vehicle. The main supply route was very dusty. So dusty that they could not see the vehicle in front of them. The cooks ended up following one of the remote RAU teams up to the Yoda. It took the First Sergeant until the next day before he found them and got them back to the Node Center where they belonged. What could have been done differently to prevent this?

Part VI
FREQUENCY MANAGEMENT

Frequency management at the National Training Center is often a challenge. The frequency spectrum is limited. Signal units will not always get exactly what they want. In large MSE Networks, frequency management becomes a very important consideration. Although the MSE network in support of one Brigade at NTC is relatively small, we must manage our scarce frequency resource wisely. The desert terrain does not mask or block frequencies very well. This is a two-edged sword. On one hand, signal units are capable of putting in reliable LOS shots up to 45 kilometers. On the other hand, two of the same frequency pairs in use on low power separated by 50 kilometers tend to interfere with each other.

One good technique to manage your frequencies is to list all Band I and Band III frequencies in numerical order. Go through and choose frequencies separated by 8-10 MHz. Match the first and the middle frequency to make one pair and continue through the list until all the usable frequencies are paired up. Go back and alternate the polarization on each consecutive pair. Now we have the best separation possible. For example:

Step 1: Highlight frequencies with a 10 MHz separation. Start with the lowest frequency.
Step 2: Count the number and divide by two (pairs).
Step 3: Pair the first frequency with the middle frequency (maximum separation).
Step 4: Alternate polarization beginning with pair one.
Step 5: Assign frequency pairs based on location. Maximum separation between adjacent pairs.

Frequency	Pair	Polarization	Transmit Grid	Recv Grid	Power
230.625	1	H			
232.625					
241.500	2	V			
247.625					
272.375	3	H			
280.500					
286.750	4	V			
300.125	5	H			
301.750					
304.500					
313.125	6	V			
320.125					
325.625	1	H			
337.125	2	V			
341.250					
345.500					
347.625	3	H			
352.875					
358.375	4	V			
362.625					
368.250	5	H			
375.250					
390.000					
396.500					
399.125	6	V			

Following Figure 11 on page II-15 gives us the following frequency pairs (Figure 11 shows this information in matrix format):

Pair 1: 230.625/325.625 H
Pair 2: 241.500/337.125 V
Pair 3: 272.375/347.625 H
Pair 4: 286.750/358.375 V
Pair 5: 300.125/368.250 H
Pair 6: 313.125/399.125 V

Part VII
RISK MANAGEMENT

Every leader plays a role in the risk management process. Risk management is not an afterthought. It must be incorporated into the planning process. Risk management is more than a safety brief. Risk management must address both Operational Risk (Risk to mission) as well as Safety Risk (Risk to soldiers). The Force XXI model of risk management is the Army Standard.

The first step is to identify these risks. During the planning process, we identified assumptions. These assumptions are risks. Some examples of risks that have been identified by units follow:

Operational Risk:

Risk of attack by small PPG force between EENT and BMNT.
Risk of losing MSE communications at the BCT TOC during the battle.
Risk of remote RAU team being attacked by OPFOR Armor threat.

Safety Risk:

Hazards while driving at night.
Hazard of casualties because of heat.
Hazards because of lack of sleep.

Control measures must be identified and implemented to mitigate these risks. How do we implement these control measures and who implements these control measures?

For example:

Operational:

Increased Security between EENT and BMNT; conduct patrols.
Provide redundant SEN at BCT TOC linked into a different Node Center.
Identify trigger for RAU to jump back.

Safety:

Drivers and TCs will have operational NVGs.
Forced hydration, one quart per hour.
Implement sleep plan.

After identifying the risks and the control measures, we must do two things: Identify who will supervise the control measures, and brief the soldiers.

For example:

Operational:

Sergeant of the Guard will supervise patrols at night. PSG develops schedule.
SYSCON, PLT LDR will monitor status of both SEN links at BCT TOC.
RAU team chief understands trigger, has binoculars to see trigger and battletracks.

Safety:

Section Sergeants will inspect NVGs prior to roll out.
Team leaders will conduct force hydration at the top of every hour.
Sleep plan is posted and enforced by Team and Section Leaders.

Use a risk management worksheet (see Figure 12) to document all this information.

The risk management worksheet must be briefed and posted where all can read it. All leaders at all levels perform the risk assessment. The higher the level of supervision, the more the risk is mitigated. In the example above, the team leaders supervise the forced hydration of their team. If the unit continues to have heat-related problems, the commander may elect to have section sergeants personally supervise the forced hydration. Doing this would increase the burden on the unit.

RISK MANAGEMENT WORKSHEET

PAGE ___ of __

1. MSN/TASK:	2. DTG BEGIN: END:	3. DATE PREPARED:
4. PREPARED BY: _____ RANK/LAST NAME/DUTY POSITION		

5. HAZARDS	6. INITIAL RISK LEVEL	7. CONTROLS	8. RESIDUAL RISK LEVEL	11. HOW TO IMPLEMENT	12. HOW TO SUPERVISE	13. CONTROLS EFFECTIVE

9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE):	10. RISK DECISION AUTHORITY:
LOW MODERATE HIGH EXTREMELY HIGH	_____ **RANK/LAST NAME/DUTY POSITION**

Chapter 2: PREPARATION FOR A SUCCESSFUL MSE NETWORK

Part I
RECEPTION, STAGING, ONWARD MOVEMENT AND INTEGRATION (RSOI)

Reception, Staging, Onward movement and Integration (RSOI) is a week-long event. It covers everything that must get accomplished upon arrival to a theater of operations. Everything from downloading equipment to drawing ammunition, and supplies. The mission of the Signal Company during RSOI week is two-fold. The Signal Company must prepare for combat operations, and they must also support the Brigade Combat Team's communication requirements.

The goal of RSOI is to build combat power. As signal leaders, our contribution to building combat power is building communications power. Below are some considerations for planning and executing RSOI week.

1. Is equipment prioritized during rail operations? Are the Node Center Switch vans loaded on different rail cars, or have we put all our critical assets on one rail car?
2. Do operators complete PMCS of systems after rail download? Don't forget to include Vehicles, Trailers, Generators, Radios, MSE Communications Systems, DNVTs, MSRTs, UXC-7 FAX, and TACLAN Computers.
3. Is a complete SWITCHEX performed? Are all SENs, NCs, FESs, and LENs put in system? Is a load put on the system?
4. Are all LOS systems tested? Are all stacks in all LOSV3s and LOSV1s put in system? Are all SHF shots put in system?
5. Are all RAUs put in system with GLUs affiliated, RAU markers turned on, and MSRTs affiliated?
6. Was a complete COMMEX scheduled and performed to include all user-owned and -operated equipment (both internal and external to the SIG CO)?
7. Is a RAU filling station established? Is a log kept to identify whose MSRTs are checked out?
8. Is an accurate phone book published? Does it contain accurate MILIDs for EPLRs?
9. Are all classes of supplies required on hand or on order? What is the plan to pick up supplies? You must account for water, fuel, ammunition, and other classes of supplies.
10. Are all weapons systems zeroed with MILES?
11. Are the appropriate vehicles getting their MILES installed?
12. Signal Planning:
    a. Is the SYSCON/Signal Company Plan synchronized with the BCT's plan?
    b. Is the Parallel planning process working between Brigade and SYSCON? Between SYSCON and the Company? Between Company and Platoon?
    c. Is the SYSCON/Company using the Military Decision-Making Process?
    d. Is the Logistics plan synchronized with the BCT's plan?
    e. Does the Company/SYSCON abide by the 1/3, 2/3 rule?
    f. Do all leaders use proper Troop-Leading Procedures? (See Figure 13.)

Troop-Leading Procedures

Receive the Mission	**Mission Analysis** **Purpose/Endstate** **Prioritize PCC/PCI** **Make Timeline**
Issue the Warn Order	**Mission** **PCC/PCI Priorities** **Timeline**
Make a Tentative Plan	**IPB** **METT-T**
Initiate Movement	**Rehearsal Plan**
Conduct Reconn	**Route and Site** **Advance Party Op** **Site Diagram**
Complete the Plan	**Security Plan** **Movement Plan**
Issue the Order	**5-Para OPORD**
Supervise	**PCI** **Rehearsal** **Execution**

g. Are scheduled situation briefings done to subordinates at all levels?
   Do soldiers know Challenge and Password?
   Who/Where is enemy?
   What are his capabilities?
   Who/Where are the friendly units?
   What is the Main Supply Route (MSR)?
   What is mission/intent of Company?
   What is mission/intent of higher headquarters?
h. Is a Safety Risk Assessment completed for each event, at all levels?
i. Do SYSCON, Company Commander, and Platoon Leader issue a five-paragraph operations order?

Part II
THE SWITCH EXERCISE (SWITCHEX)

The SWITCHEX conducted during RSOI is critical to the success of the entire rotation. Whether deploying to NTC or anywhere in the world, the process is the same. The SWITCHEX must be thoroughly planned before arriving at NTC. The SWITCHEX is really a misnomer. It is better to think of it as the MSE Signal Company internal COMMEX. It must be complete and test every system, every radio, every antenna, every cable, everything.

The SYSCON and Platoons must track the status of the SWITCHEX. Upon completion of the SWITCHEX, priorities must be set to repair, replace or redistribute equipment. It is much easier for communications-electronics personnel to repair broke systems during RSOI week because everything is generally collocated. Once signal teams deploy with their supported units, maintenance personnel will have a two- to three-hour drive between sites. Listed at Figures 14a and 14b are examples of a SWITCHEX timeline and a tracking mechanism that can be used during the MSE Company SWITCHEX.

MSE SWITCHEX

TIME	Element	Event	Note
H	ALL	PMCS	(VEH, GEN, TRL, FM)
H+1	ALL	MSE PMCS/Local Checks	(See checklist 1)
H+2	ALL	COMSEC Issue	
H+3.5	ALL	FM Radio Check SCC	(All FM radios) (See checklist 2)
H+3.5	NC60	Initialize Switch/Packet	
	G11	SHF	
H+4	G11	CNRI	
	NC60/SCC	Establish SCC	
H+4.5	LRAU60	Establish Local RAU	
H+5	NC60/NC61	Internodal Established	
H+5.5	NC60/L64	Internodal Established	
H+6	L64/NC61	Internodal Established	
	Z60	VIA Relay Band I/Band III	
H+6.5	G11/NC60	Band I Link	
H+7	G11/NC60	Band III Link	
H+7.5	RRAU60	Install Link Band I	
H+8	RRAU60	Install Link Band III	

MSE SWITCHEX TRACKING

	SYSTEM	BAND I	BAND III	SHF	CNRI	TACLAN DATA	MSRT	DNVT	TACFAX	FM
NC60	G			R		G	R	G	G	G
LOS V3	G	G	G					G		
LOS V3	G	G	G	G				G		
LOS V3	G	G	G					R		
LOS V3	G	G	R					G		
LRAU60	G									
RRAU60	G	G	G				G			G
SEN G11	G	G	G		G	G		G		G
SEN G21	G	G	G			G		G		G
SEN G23	R	G	G	G	G	G		G		G

TRAIN THE FORCE

Part III
PRE-COMBAT CHECKS AND PRE-COMBAT INSPECTIONS

The pre-combat checks and pre-combat inspections should be done by all teams daily. Remote RAU and relay teams can model their PCC/PCI checklist after the FM Retrans PCC/PCI found in Part I and in **FM 11-43, *The Signal Leader's Guide.*** Some signal teams do not move often, but they must still conduct PCCs and PCIs to ensure they are ready for upcoming missions.

Listed at Figure 15, page II-25, are items that often get overlooked:

	MAINTENANCE/LOGISTICS
	5988Es COMPLETED.
	5988Es TURNED IN.
	GENERATORS SERVICED.
	AOAP/OIL CHANGED.
	VEHICLE DISPATCHED.
	WEAPONS CLEANED/PMCS.
	COMSEC INVENTORY.
	CL III ON HAND.
	CL I/WATER/ICE ON HAND.
	LIST ALL BAD EQUIPMENT (DOWN TO THE CABLE).
	SITE DEFENSE
	SOLDIERS HAVE ASSIGNED FIGHTING POSITIONS.
	SOLDIERS HAVE SURVIVABILITY POSITIONS.
	SURVIVABILITY POSITIONS HAVE 18" OF OVERHEAD COVER.
	SOLDIERS KNOW CASUALTY COLLECTION POINT/CASEVAC PLAN.
	M8 ALARMS IN PLACE/OPERATIONAL.
	SOLDIERS KNOW SIGNAL FOR GAS.
	SOLDIERS KNOW SIGNAL FOR GROUND ATTACK.
	GUARDS HAVE NVGs/BINOs/COMMO.
	COMBAT LIFESAVERS HAVE COMPLETE CLS BAGS.
	SOLDIERS HAVE CL V (AMMO).
	FORCE PROTECTION REHEARSALS CONDUCTED.
	SITUATIONAL AWARENESS
	SOLDIERS KNOW THE BRIGADE'S MISSION.
	SOLDIERS KNOW THE BRIGADE'S LD/FEBA.
	SOLDIERS KNOW THE LD/DEF TIME.
	SOLDIERS KNOW CORRECT MOPP POSTURE.
	SOLDIERS KNOW THE CHALLENGE AND PASSWORD.
	SOLDIERS KNOW THE BRIGADE COMMANDER'S PIR.
	SOLDIERS BRIEFED OFF A MAP WITH BRIGADE MANEUVER GRAPHICS.
	SOLDIERS CAN POINT IN DIRECTION OF ENEMY.
	SOLDIERS KNOW WEAPONS CONTROL STATUS AND WHAT IT MEANS.
	SOLDIERS CAN IDENTIFY OPFOR A/C FROM BLUEFOR AIRCRAFT.
	SOLDIERS KNOW THE NEAREST AID STATION/AXP.
	SOLDIERS KNOW WHERE THE DECON POINT IS.
	SOLDIERS KNOW THE BLUEFOR MSR.
	LOS OPERATORS KNOW THEIR LATEST R-6 STATUS.
	RISK ASSESSMENT
	RISK ASSESSMENTS WRITTEN AND BRIEFED
	AT TEAM/SECTION/PLATOON/AND COMPANY LEVELS.
	NODE CENTER CP
	HAVE CURRENT TECH DATA POSTED.
	NMF HAS NETWORK DIAGRAM POSTED.
	NMF HAS DATABASE POSTED.
	NMF HAS R1-R6 REPORT POSTED.
	NMF HAS ALL PERSONNEL ACCOUNTED FOR.
	NMF HAS CURRENT EQUIPMENT STATUS.
	NMF ACCOUNTS FOR ALL SENSITIVE ITEMS INCLUDING EXTENSIONS.
	SITE DIAGRAM/SITE DEFENSE PLAN POSTED.
	GUARD ROSTERS POSTED.
	PATROL PLAN DEVELOPED AND POSTED.
	BCT MISSION AND INTENT POSTED.
	BCT CDR's PIR POSTED.
	FRIENDLY SITUATION KNOWN.
	CHALLENGE AND PASSWORD POSTED.
	BATTLE MAP WITH GRAPHICS POSTED.
	MOPP POSTURE/NBC THREAT POSTED.
	AIR THREAT AND WCS POSTED.

Part IV
REHEARSALS

Practice! Practice! Practice! The more rehearsals conducted, the better the operation. There are numerous types of rehearsals and they can all be employed while at the NTC.

The Signal Rock Drill. Usually this rehearsal is conducted during RSOI week and again in preparation for live-fire operations. It is used when the plan calls for major network changes that must be well synchronized. Typically, all team leaders gather around a terrain board. The S3, S2, and Company Commander lead the rehearsal. All teams brief how their part supports the plan. Refer to **FM 101-5,** ***Staff Organization and Operations,*** for details.

The Brigade Combat Team conducts a **Combined Arms Rehearsal (CAR)** before every mission. The Signal Company Commander and SYSCON must attend if they are to stay abreast of current changes to the maneuver plan. It is wise to have remote teams that are deploying with other units attend these rehearsals as well. For example, if a remote RAU team is moving with a Task Force or through their sector, they should attend that Task Force's rehearsals.

Force Protection Rehearsal. This type of rehearsal is a drill conducted at signal sites. Platoons and sections must drill their soldiers on site defense procedures, reaction to artillery, air strike, chemical attack. These drills should be conducted both during the day and at night.

Chapter 3: EXECUTING THE SUCCESSFUL MSE NETWORK

Part I
BATTLE TRACKING

Battle-tracking is another name for situational awareness. Signal units are not training in this area and, consequently, most units have no knowledge or systems in place to track the battle. Poor battle-tracking results in unnecessary loss of life and equipment on the battlefield. Figure 16 provides a summarized list of what soldiers need to know.

1. *AT A MINIMUM,* does each soldier get a *DAILY* update on:
- ☞ **NBC threat (not just the MOPP level!)?**
- ☞ **Air threat** (what does "yellow tight" really mean? Ask soldiers.)?
- ☞ **Artillery threat** (are we in enemy range fans)?
- ☞ **Ground threat** (rear area, bypassed units, snipers)?
- ☞ **General situation.** Is there a battle going on right now? Tomorrow? Which way is the enemy?

2. Does the Node CP update all soldiers daily? How?

SUGGESTION: Get an intelligence update from SYSCON or Bde. Just before Stand-to, brief team chiefs as part of Stand-to and have them go out and brief soldiers on the perimeter. Brief EVERYBODY. Get all extensions on a conference call and update them, as well as verify sensitive items.

Need to brief from SITMAPs and posted maneuver graphics. Train junior officers and NCOs. Prompt leaders to ask the S2 if they do not understand a symbol posted on the graphics.

3. How are extensions kept current? Not just remote sites, such as RAUs and relays, but SEN teams which may or may not be briefed by their supported unit.

Extensions are the toughest part of battle tracking. SENs operate across the division under a variety of threat conditions. Assuming their supported TOCs will take care of them is assuming the problem away. At a minimum, leaders must check to ensure they are briefed and intervene as necessary. The threat to Remote RAUs and relays is considerable, and it must be analyzed and disseminated. How is the unit doing this; what is the SOP; what is the plan?

4. Does the Node CP have maneuver graphics (division or brigade)? Do they know how to read them? Do officers/NCOs know basic map symbology and maneuver terms? This can become a training goal for the rotation -- encourage it.

NOTE: At a minimum, leaders can get by with the following symbology and terms:

☞ **LD.** The line of departure for the attack. They need to know how far from it they are. Knowing the time of attack is critical. Systems should be up and checked, MSRT numbers verified, and soldiers at a heightened alert status. The LD time lets you deduce lots of other things: which way the traffic's going, what time the hospitals will be maxed out on casualties, and so forth.

☞ **No pen line.** The no penetration line in a defense. In addition, the *size* of the enemy unit they will deny.

☞ **Phase lines and routes/axis of advance.**

☞ **Bypass criteria.** This tells you the size of the enemy force that our combat troops will bypass; this is the size enemy signal soldiers will probably face.

☞ **MSR.** And routes, as well as axis of advance.

☞ **Objective.** The point of it all.

☞ **The brigade/division mission?**

5. During the Battle.

☞ **Does the node management facility (NMF) maintain good situational awareness during the battle?** Are they tracking the enemy, phase lines? Are they monitoring the appropriate battle net (BDE CMD or O/I)?

☞ **Are extensions updated on the situation during the battle (recommend every hour as a minimum)?** Who does it, NMF or SYCON (SOP!) Do extensions have maps? Do they know where they are on the battlefield -- how far from the LD? Do they have any mini-graphics or any way to track the battle?

☞ **Do extensions and nodes have withdrawal criteria?** Is it realistic, based on OPFOR rate of march? Does the site understand it?

☞ **Is the SYSCON monitoring the battle and updating the nodes?** Who exactly is responsible to update remote sites? How? How often? Has SYSCON/S2 coordinated or set withdrawal criteria for endangered sites? Is it based on OPFOR rate of march and battle situation?

☞ **Do nodes have a plan to move if threatened?** Have they thought about how they will break their site? Have they practiced the withdrawal plan? Cargo should be forward-positioned to help the node or RAU break (maybe extra bodies to the RAU) and leaders should have a definite plan. Has the plan been rehearsed?

6. SYSCON/S2. Is SYSCON attending division LO meetings; do they know what's going on? Are they aggressively wargaming the impact of best and worst battle outcomes for the network? Are they planning to reconfigure the network if sites must "bug out"?

7. Do leaders and drivers check in with the NMF for threat updates before leaving the site -- this includes mechanics, extension supervisors, CE Maintenance, GTE reps, cooks, company Cdrs, XOs.

8. If SYSCON does not answer the NMFs' questions, do they quit? Do team chiefs quit if the NMF or their supported TOC fails to inform them? Are extensions getting updates from their supported TOCs; is anyone in the signal battalion calling and checking their situational awareness?

9. Are NMFs using all available data -- from extensions, bde staff, SYSCON -- to keep the clearest possible picture?

10. The chart on the next page highlights critical battle-tracking considerations for all signal sites.

BATTLE TRACKING
SITUATIONAL AWARENESS

I. Soldiers Updated?
- Briefed off of Map with Graphics
- NBC Threat
- Air Threat
- Artillery Threat
- Ground Threat
- Point toward Enemy
- Friendly Situation
- BCT Mission

II. Graphics include
- LD/FEBA/FLOT
- No Pen Line & Bypass Criteria
- Phase Lines/Routes
- Axis of Advance
- MSR
- Objectives

III. During Battle
- Front-Line Trace
- When do I bug out?
- When do I pack?
- Battle Nets monitored
- Threat Updates

Part II
SITE DEFENSE

Site defense is inadequately trained, if trained at all, in most signal units. Look for a logical plan that is realistic and smart, and that is possible with whatever limited manning the site has. Figures 17a and 17b provide a list of considerations for the site defense plan. All signal units are short-handed. That is reality. The enemy will not care that you are undermanned. To compensate for low manning, leaders must develop detailed plans, SOPs, and assign specific tasks down to individuals. The plan must be rehearsed, day and night.

Assess the plan on METT-T (mission, enemy, terrain, troops, and time available). You simply cannot go wrong. Each site will be different. Defense plans and preparations should get better the longer the unit remains in place. Priority of work may differ based on the enemy threat.

Signal Node Centers have defeated OPFOR PPG squads in only five of 100 attacks in recent years. The five platoons that have successfully defended themselves had the following three things in common:

1. All soldiers had zeroed their miles daily.
2. They conducted numerous patrols both day and night.
3. The leadership walked and studied the terrain looking for ways they would attack if they were OPFOR.

Good site defense requires (1) Common Sense, (2) Knowledge of your enemy, (3) A Good Plan (that the leadership spent serious effort developing) and (4) A well-rehearsed team. Rehearse both day and night. Every soldier has to know what to do. Below are some basic questions all too often never asked.

1. **REALISM/METT-T.** Is the plan realistic for the site's manning? Does it try to cover too much (frequently the problem with Node Centers) or not enough (typically the problem with remote RAUs, which do not post security although they could)?

2. **REHEARSALS.** Has the site rehearsed the plan, day and night? Battle Drills! During Stand-Too and Stand-Down, do we go to DC power and turn the generators off?

3. **ALARMS.** What is/are the site alarms? Do the soldiers know? Can everyone on the site hear even in the shelters with generators going?

4. **FIGHTING AND SURVIVALBILITY POSITIONS.** You need both. Survivability positions are holes to protect you from incoming artillery. They should be dug near where soldiers work and live. Fighting positions are dug on the perimeter based on the site defense plan. Rarely should the two be combined.

5. **LIKELY AVENUES OF APPROACH.** Use common sense. The enemy will most likely come from the direction that offers him the best opportunity for success. Know your enemy. Will they walk, drive wheeled vehicles, tanks, tracks, use artillery? Do we cover the likely avenues of approach with our biggest weapons? Do we observe these areas more often? Have we planned any obstacles?

6. **PATROLS.** Do them. Do mounted patrols in the daytime and dismounted patrols at night.

7. **CREW-SERVED WEAPON POSITIONS.** Do they have:
   - ✔ **Blank adapters?**
   - ✔ **Traverse and elevation mechanisms that soldiers know how to use?**
   - ✔ **Range cards that soldiers can explain?**
   - ✔ **Ammunition?**
   - ✔ **Are the gunner and assistant gunner qualified?**

8. **OBSERVATION POSTS.** If you spot the OPFOR before he gets in, you will kill him. If he gets in your perimeter, you are dead. Do night OPs have NVGs? Do the OPs have communications back to the site CP? Walk outside the perimeter and look to see what the OPFOR will see - you may be surprised.

9. **QUICK REACTION FORCE.** Do you have one? Do they rehearse? They must learn how to maneuver as one team; otherwise, they are not effective.

10. **PERIMETER COMMAND AND CONTROL.** How do you control the perimeter when you are under attack? At night, this is very difficult. What is the SOP? Where do the PLT LDR and PLT SGT go? Who calls higher to report? Who controls the QRF? Where is the Casualty Collection Point? Is there a rally point if the site is overrun?

One way a unit might organize its perimeter: divide the perimeter into three or four sections. Assign one Section Sergeant to each sector. Each section sergeant then becomes a "sector sergeant," responsible for his piece of the pie. They collect casualties and reports from their people and send them to the NMF. The PLT LDR stays at the NMF, and controls the site from there. The PLT SGT takes control of the QRF and goes to where he can be of most use. Every soldier must know the plan in case the section sergeant becomes a casualty or is off site.

11. **AMMO/PYRO.** How much is the site's basic load? Do they have vipers? Parachute flares? Trip flares? Is ammunition distributed evenly?

12. **SITE DEFENSE DIAGRAM.** Do we post a site defense diagram where all can see it? Is it drawn on a 1:25K map? Does it include range arcs and limits of weapons? A sand table is an excellent way to visualize and brief your site defense plan to all the soldiers on site.

SITE DEFENSE PLAN

1/2

I. OP/LP Established
- NVG's/Binos/Commo
- Field of Fires

II. Fight Positions Assigned
- Crew-Served Weapons
- Range Cards
- Sector Stakes
- Overlapping sectors
- Sector Sergeants assigned

III. Survivability Holes dug
- 18" Overhead Cover
- Near work and sleep areas

IV. Other
- Ammo Supply Point
- Blank Adapters
- Weapons Zeroed
- M8 Alarm placed

V. Special Attention
- Ave of Approach
- Dead Space
- What Enemy sees?
- Signals for Attack:
  - Ground
  - Air
  - Chem

SITE DEFENSE PLAN

2/2

VI. QRF Established
- Linkup point
- Who controls
- Rehearsal

VII. Patrols
- Established
- Route Planned
- Vary time/route

VIII. Fire Support Plan
- TRP's
- How to call for Fire

IX. Site Defense Diagram
- Can everyone see it?
- Prominent Terrain
- OP/LP
- Special Weapons
- Dead Space
- Obstacles/Trip Flares
- Fight Positions
- Survivability Positions
- Perimeter Sectors
- Rally Point
- Ammo Point
- CASEVAC Point

Part III
REMOTE SITES

As small, isolated teams, often operating well forward, RAUs and relays need to cover some basic survival skills and have excellent situational awareness. A relay is usually just a two-soldier team; their best defense is to hide, then move when threatened (and it's up to the leadership to move them in time by setting realistic triggers and listening to SITREPs!). A RAU has more manning, and once the system is installed, only one soldier on duty -- they should have good security as well as fighting and survivability positions. However, just like all other small teams, their best defense is hiding well. Some considerations for the remote team are:

1. Was the team briefed off a SITMAP? Does the team have graphics?

2. Do they understand their mission, the enemy and friendly situation, and where the distant end is located?

3. Do they know where the enemy is located? If they are forward of the BDE TOC, they need more details: what time is LD; which way are the units going?

4. Do they know where the enemy is -- can they point toward the enemy?

5. Pre-Combat Checks: Do they have everything they need -- map, crypto, SOI or frequency list, coax, connectors. Be sure and check their food and especially their water. Did they do pre-combat checks? How -- is there a checklist, an SOP? What is their SOP?

6. Do they have binoculars? Are they trained to call in SITREPs or fire support?

7. Did they receive a five-paragraph OPORD (verbal is fine). Did it include:
   a. Nearest AXPs (Ambulance Exchange Points)/medical aid.
   b. MSR (Main Supply Route) data.
   c. Decontamination points.
   d. Did it address casualty evacuation?

8. Do they know their technical data?

9. What is the plan for casualty evacuation? If they do not have a support vehicle, which node will respond? What is the backup plan if that node cannot help? Typically, the forward node assumes evacuation duty. However, it is not uncommon for the forward node to be overrun shortly after the RAU dies: they have their hands full and obviously cannot respond. What is the backup plan?

10. Do they have a radio or any means to talk back to their NMF or SYSCON? How will the team get instructions, warnings, call in spot reports? Who's responsible - their controlling end or SYSCON? Does everybody know? Agree? There should be an SOP.

11. Do they have tasks and a purpose? Is the system working? Do they know what they are doing -- do they understand their missions and contingency missions?

12. Do they have grids for an alternate location? Do they have a plan, criteria, and location if they bug out?

13. Are they posting security? Do teams consist of at least three soldiers? Relays may or may not have them -- we must teach that it's worth the sacrifice elsewhere, even if it is just for the critical, most dangerous time. Leaders should war-game each operation and figure this out.

> A WAY TO SECURE A REMOTE SITE: Anyone not on duty sleeps *away* from the system, hidden. The enemy will come to the truck. If possible, are there remote communications (MSRT/Radio) away from the trucks to a point where soldiers can overwatch their vehicles, spot OPFOR and react to an attack? Soldiers can then "Go to Ground."

14. Patrols: Also, get the team chiefs to check out the area around their setup; walk up the ridge, check out the next wadis over, figure out the terrain around them and analyze it for escape, hiding, and security.

15. Do they have survivability and fighting positions? Do they make sense?

16. Rig Positioning. *HIDE WITH PRIDE.* Can you see them? Are antennas masked, low as possible? Are support vehicles masked also?

a. GOOD IDEA: Wrap the CHEW Antenna head in a burlap cloth. That will make it difficult to see. Usually the first thing you see when you get within a few kilometers of a site is that CHEW.

b. Make sure you do not hide yourself out of communication. Make sure you set up on the friendly side of the terrain.

17. What is their basic load for ammunition? Do they have VIPERs, illumination flares, trip wires? Do they have any Class IV: plywood for overhead cover, concertina?

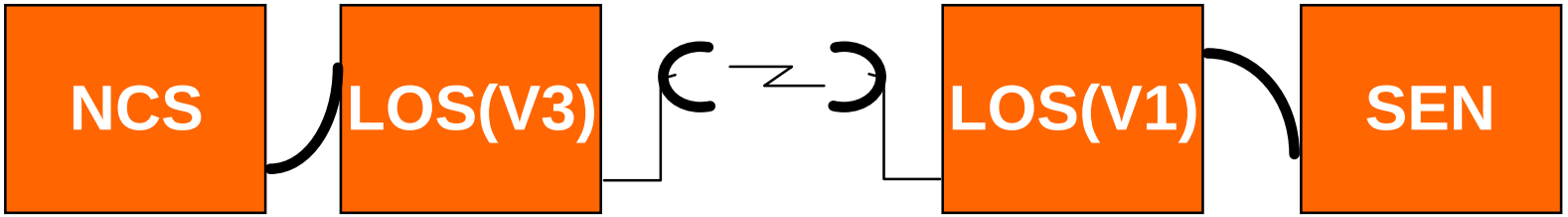
18. Are they in the right MOPP status? Do they know what it is? Do they have an M256 kit?

19. If chemical strikes occur, is the team notified? Do they get any intelligence during the battle? Are they notified of any enemy spot reports that may apply to them?

Part IV
TROUBLESHOOTING, SHF, AND CNRI

Signal units that have troubleshooting SOPs and enforce them do much better at maintaining reliable communications at NTC. Do we have agreed-upon procedures that take us through each link systematically? When soldiers start replacing equipment, changing frequencies and polarization, we quickly lose control of what is going on and the down time goes up exponentially. Develop a good SOP with one person in charge of troubleshooting the entire link. See the troubleshooting considerations, taken from TM-11-5800-216-10-4, at Figure 18.

TROUBLESHOOTING



1. NCS Operational Checklist.
2. LOS(V3) Operational Checklist.
3. LOS(V3) and LOS (V1) do 616,626,636.
4. LOS (V1) Operational Checklist.
5. LOS (V1) Patch Panel Loopback, AOD 29.
6. SEN Operational Checklist.
7. SEN Patch Panel Loopback, AOD 29.
8. LOS (V1) continuity check on patch and SEP.
9. SEN continuity check on patch and SEP.
10. SEN continuity check on interconnect cable.

TM 11-5800-216-10-4, page L-24.

SHF (Super High Frequency Radio System). A fantastic asset at the NTC, yet the most underutilized system in all of MSE. When used, it is always the most solid shot. It often eliminates the need for a relay, and frees up another frequency pair. SHF must be practiced at home station to be successful at NTC. Make SHF a training objective while you are at NTC.

CNRI (Combat Net Radio Interface). Another asset that often goes unused. Teach your subscribers about CNRI at home station. Sell this asset. Publish the frequencies/numbers in the phone book. Brief it at all meetings. CNRI is a lifesaver for Task Force SIGOs only if they know about it.

CONCLUSION

Implementing some of the TTPs and lessons we addressed in this article will assist the BSO and MSE Signal Company in time management and planning for a deployment anywhere in the world.

This article is intended to show signal leaders some critical tactics, techniques, and procedures that most often affect communications at the National Training Center. Signal leaders should take the information contained here, update their SOPs, and teach their subordinates, peers, and supervisors what it takes to communicate successfully at the NTC.

As units in the U.S. Army become more technologically advanced, their reliance on communications becomes more critical. It is no longer valid to simply assume your unit will communicate without the proper planning and training.

Final Note: NTC is an eye-opening experience. Keep your mind open and learn from it. Train your unit well and best of luck!✪

APPENDIX A
REFERENCES (and Recommended Readings)

United States Army, 1990. **FM 22-100,** ***Military Leadership.***

United States Army, 1992. **FM 7-8,** ***The Infantry Platoon and Squad.***

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United States Army, 31 May 1997. **FM 101-5,** ***Staff Organization and Operations.***

United States Army, August 1997. **FM 101-5-1,** ***Operational Terms and Graphics.***

United States Army, April 1998. **FM 100-14,** ***Risk Management.***

United States Army, May 1999. ***Signal Letter of Instruction for Rotational Units Deployed to the National Training Center.***

United States Army, 22 June 1999. **FM 11-55,** ***Mobile Subscriber Equipment (MSE) Operations (1999).***